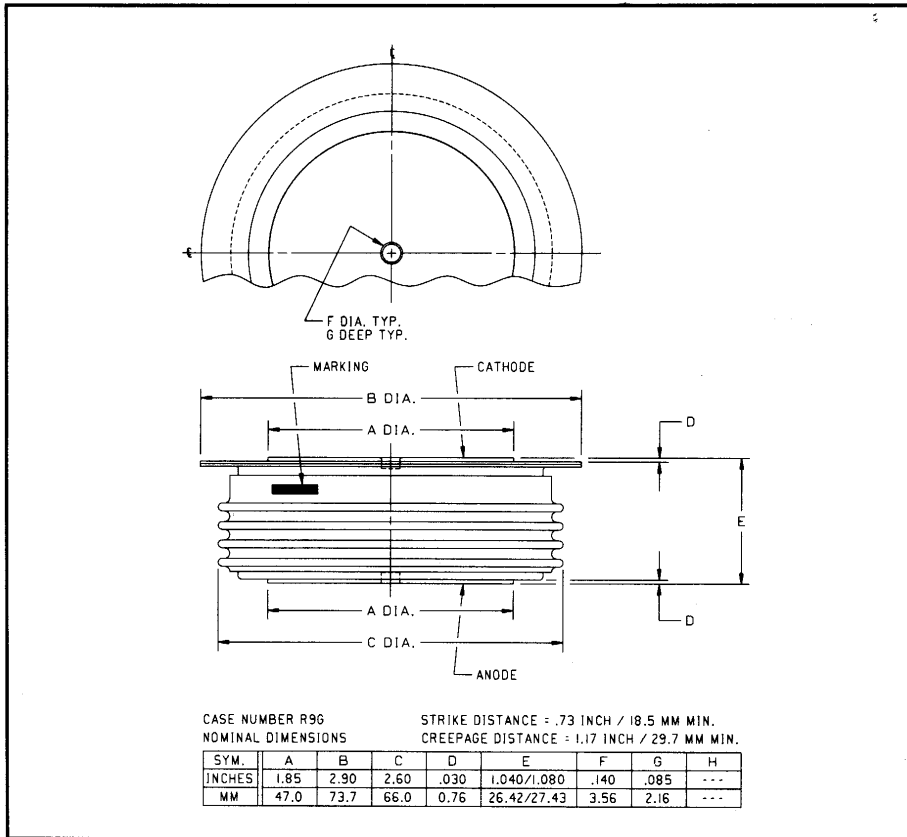


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272  
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

### General Purpose Rectifier 1200 Amperes Average 5400 Volts



R9G0 1200A (Outline Drawing)



R9G0 1200A General Purpose Rectifier  
 1200 Amperes Average, 5400 Volts

#### Description:

Powerex General Purpose Rectifiers are designed for high blocking voltage capability with low forward voltage to minimize conduction losses. These hermetic Pow-R-Disc devices can be mounted using commercially available clamps and heatsinks.

#### Features:

- Low Forward Voltage
- Low Thermal Impedance
- Hermetic Packaging
- Excellent Surge and  $I^2t$  Ratings

#### Applications:

- Power Supplies
- Motor Control
- Free Wheeling Diode
- Battery Chargers
- Resistance Welding

#### Ordering Information:

Select the complete 8 digit part number you desire from the table below.

Type	Voltage	Current	Typical Recovery Time
	$V_{RRM}$ (Volts)	$I_T(av)$ (A)	$t_{rr}$ ( $\mu$ sec)
R9G0	10 through 54	12	XX
	1000V through 5400V	1200A	25 $\mu$ sec

**R9G0 1200A**  
**General Purpose Rectifier**  
 1200 Amperes Average, 5400 Volts

## Absolute Maximum Ratings

Characteristics	Symbol	R9G0 1200A	Units
Non-repetitive Transient Peak Reverse Voltage	$V_{RSM}$	$V_{RRM} + 200V$	Volts
RMS Forward Current, $T_C = 102^\circ C$	$I_{F(rms)}$	1880	Amperes
Average Current 180° Sine Wave, $T_C = 102^\circ C$	$I_{F(av)}$	1200	Amperes
RMS Forward Current, $T_C = 55^\circ C$	$I_{F(rms)}$	2640	Amperes
Average Current 180° Sine Wave, $T_C = 55^\circ C$	$I_{F(av)}$	1680	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	$I_{fsm}$	16000	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	$I_{fsm}$	14600	Amperes
3 Cycle Surge Current	$I_{fsm}$	12000	Amperes
10 Cycle Surge Current	$I_{fsm}$	10000	Amperes
$I^2t$ (for Fusing) for One Cycle, 60Hz	$I^2t$	1,100,000	$A^2sec$
Maximum $I^2t$ of Package ( $t = 8.3$ msec)	$I^2t$	$90 \times 10^6$	$A^2sec$
Operating Temperature	$T_j$	-40 to +190°C	°C
Storage Temperature	$T_{stg}$	-40 to +190°C	°C
Approximate Weight		1	lb.
		454	g
Mounting Force		5000 to 6000	lb.
		2270 to 2700	kg.

**R9G0 1200A**  
**General Purpose Rectifier**  
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## Electrical Characteristics, $T_j = 25^\circ\text{C}$ Unless Otherwise Specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Peak Reverse Leakage Current	$I_{RRM}$	$T_j = 125^\circ\text{C}, V_R = V_{RRM}$			150	mA
Forward Voltage Drop	$V_{FM}$	$I_{FM} = 1500\text{A}, \text{Duty Cycle} < 0.1\%$			1.45	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 190^\circ\text{C}, I = 15\%, I_{T(av)} \text{ to } \pi I_{T(av)}$			1.07197	Volts
Slope Resistance, Low-level	$r_{T1}$				0.32357	$\text{m}\Omega$
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 190^\circ\text{C}, I = \pi I_{T(av)} \text{ to } I_{TSM}$			1.32168	Volts
Slope Resistance, High-level	$r_{T2}$				0.28547	$\text{m}\Omega$
$V_{TM}$ Coefficients, Low-level		$T_j = 190^\circ\text{C}, I = 15\% I_{T(av)} \text{ to } \pi I_{T(av)}$				$A_1 = 1.35256$ $B_1 = -0.07539$ $C_1 = 2.5757\text{E-}04$ $D_1 = 9.591\text{E-}03$
$V_{TM}$ Coefficients, High-level		$T_j = 190^\circ\text{C}, I = \pi I_{T(av)} \text{ to } I_{TSM}$				$A_2 = -4.04314$ $B_2 = 0.74639$ $C_2 = 2.726\text{E-}04$ $D_2 = -0.01249$
Typical Reverse Recovery Time	$t_{rr}$	$T_C = 25^\circ\text{C}, I_{FM} = 1500\text{A},$ $di_F/dt = 25\text{A}/\mu\text{sec}, t_p = 190\mu\text{sec}$		25		$\mu\text{sec}$

## Thermal Characteristics

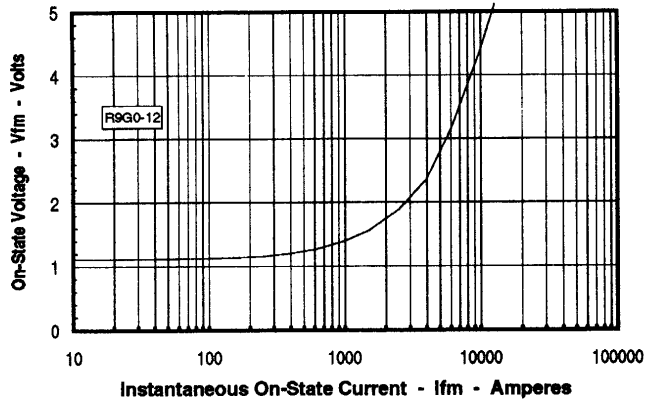
Maximum Thermal Resistance, Double Sided Cooling

Junction-to-Case	$R_{\theta(j-c)}$		0.020	$^\circ\text{C}/\text{W}$
Case-to-Sink	$R_{\theta(c-s)}$		0.0075	$^\circ\text{C}/\text{W}$

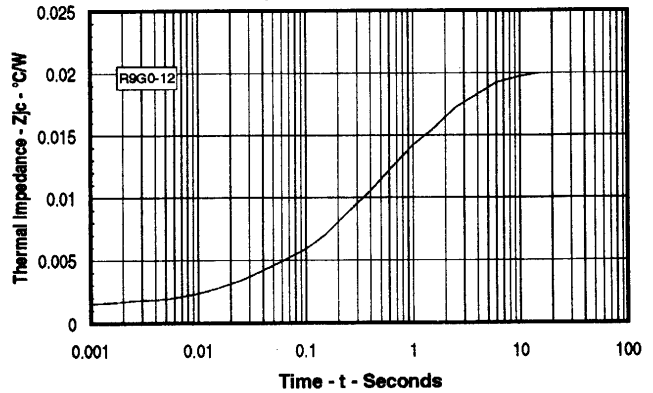
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**R9G0 1200A**  
**General Purpose Rectifier**  
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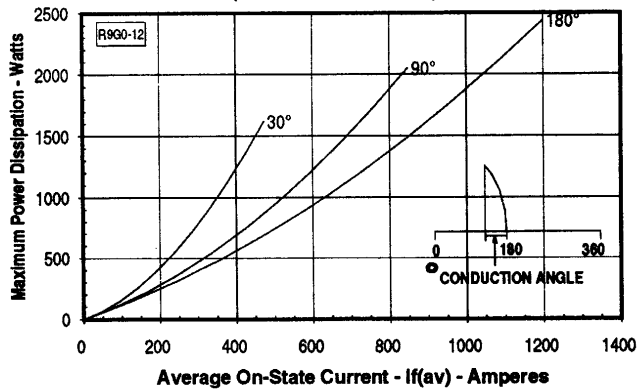
**Maximum On-State Forward Voltage Drop**  
 (T<sub>J</sub> = 150 °C)



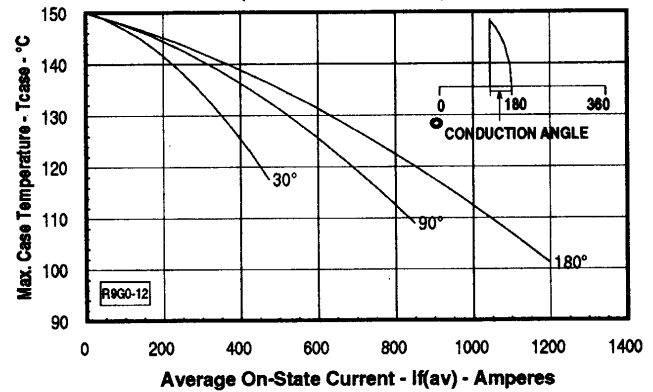
**Maximum Transient Thermal Impedance**  
 (Junction to Case)



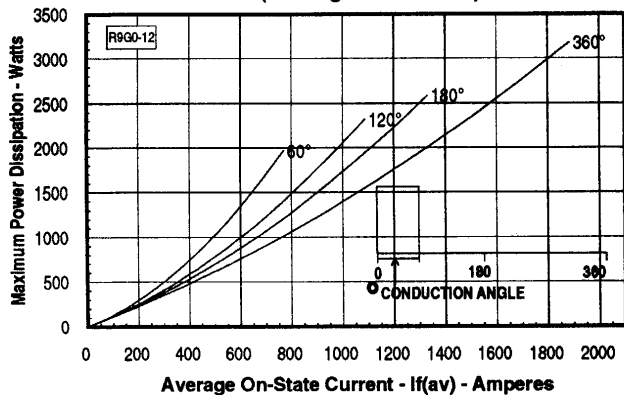
**Maximum On-State Power Dissipation**  
 (Sinusoidal Waveform)



**Maximum Allowable Case Temperature**  
 (Sinusoidal Waveform)



**Maximum On-State Power Dissipation**  
 (Rectangular Waveform)



**Maximum Allowable Case Temperature**  
 (Rectangular Waveform)

